

Remarks

This is in response to the Office Action dated January 16, 2003. The Office Action rejected claims 1-47 under 35 U.S.C. §112 second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 2, 9-11, 18, 19, 26-29, 36-39, 46 and 47 were rejected under 35 U.S.C. §102(e) as being unpatentable over U.S. Patent No. 6,504,827 B1 (Kuo et al.). The Office Action rejected claims 3-8, 12-17, 20-25, 30-35 and 40-45 under 35 U.S.C. §103(a) as being unpatentable over Kuo et al. in view of U.S. Patent No. 5,764,867 (Easton). Applicants have amended claims 1, 2, 3, 11, 12, 18, 19, 20, 28, 29, 30, 38, 39 and 40 in order to more particularly claim the invention. Claims 1-47 remain for consideration.

I. REJECTION UNDER 35 U.S.C. §112 SECOND PARAGRAPH

The Office Action rejected claims 1-47 under 35 U.S.C. §112 second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action asserted that in claims 1, 11, 18, 28 and 38 the term "characteristics of channels" is vague and that applicant was required to more particularly specify the characteristics. In response, applicant has amended claims 1, 11, 18, 28 and 38 to more particularly point out that the characteristics being referred to are "propagation characteristics." Support for this claim amendment is contained in the originally filed application at least at page 5, lines 26-30 and page 7, line 24 through page 8, line 5. Withdrawal of the §112 rejection is hereby requested in view of this clarifying amendment.

The Office Action further asserted that in claims 9, 26, 36 and 46 the term "processing set" is confusing because the term "processing set" is too vague in that it is not clear what processing set the system has to maintain. Applicants respectfully traverse this rejection. The full claim limitation reads "processing set of said plurality of wireless terminals." As such, the claim is clear in that the

processing set being maintained is a set of wireless terminals. These claims are related to the sequential packing feature of the present invention as summarized in the specification at page 3, lines 13-30. Withdrawal of the §112 rejection is hereby requested.

II. REJECTION UNDER 35 U.S.C. §102(e)

Claims 1, 2, 9-11, 18, 19, 26-29, 36-39, 46 and 47 were rejected under 35 U.S.C. §102(e) as being unpatentable over Kuo et al. In order for claims to be properly rejected under 35 U.S.C. §102(e), each and every element of the claim must be disclosed by the cited reference. Kuo et al. does not disclose each and every element of these claims.

Kuo et al. is directed to utilizing a discontinuous data transmission technique in connection with data transmission in a wireless communication system. Kuo et al. is largely unrelated to the present invention for the reasons set forth below.

As an initial matter, it is noted that claims 1, 2, 3, 11, 12, 18, 19, 20, 28, 29, 30, 38, 39 and 40 have been amended to change "code" to "spreading code". The term "code" as used in the claims was intended to mean spreading codes, as set forth in the specification at page 1, lines 24-25. However, for clarity, the claims have been amended to make this explicit. As is well known in the art, in a CDMA system, the signals of all wireless terminals share a frequency band and are sent together in time. The signals of different wireless terminals are differentiated using spreading codes. Each wireless terminal is assigned a unique spreading code. The signal transmitted from a particular wireless terminal to the base station is combined with the wireless terminal's unique spreading code to generate an encoded signal over a wide band of frequencies.

The present invention arises out of the realization that the interference experienced by a wireless terminal in a CDMA wireless communication system is a result of a synergy between the spreading code assigned to the wireless terminal and the particular wireless channel through which the signals of the wireless terminal pass. Thus, by assigning spreading codes to terminals based

on the propagation characteristics of the wireless channel, the total interference among the wireless terminals is reduced and performance of the overall wireless communication system is improved.

Independent claims 1, 11, 18, 28 and 38 as amended, are directed to methods and apparatus for assigning spreading codes to wireless terminals based on propagation characteristics. This assignment of spreading codes based on the propagation characteristics of the wireless channels is not disclosed in Kuo et al. As stated above, Kuo et al. is directed to utilizing a discontinuous data transmission technique in connection with data transmission in a wireless communication system. Kuo et al. does not address the problem of how to assign spreading codes to wireless terminals. The portion of Kuo et al. cited in the Office Action (fig. 2, col. 4, lines 52-60) is unrelated to the subject matter of the amended claims. The cited section of Kuo et al. describes a technique for determining when to transmit data based on spectrum resources. The only discussion in Kuo et al. regarding spreading codes seems to be at col. 3, lines 17-34, in its discussion of the Walsh codes which are orthogonal functions used to define distinct communication channels. There is no discussion in Kuo et al. regarding how the spreading codes are assigned. The assignment of CDMA spreading codes based on propagation characteristics, as currently claimed, is not disclosed in Kuo et al. As such, applicants request withdrawal of the §102(e) rejection and allowance of claims 1, 11, 18, 28 and 38.

All remaining dependent claims are dependent upon an allowable independent claim and are therefore also allowable. Further, the dependent claims add further patentable subject matter which is not disclosed in Kuo et al. In general, the dependent claims contain limitations which are directed to the code optimizer and its method of operation, as further described in the specification in connection with Fig. 2. Neither the code optimizer, nor its method of operation, is disclosed by Kuo et al. In particular, the Office action rejected claims 9, 26, 36 and 46 under 35 U.S.C. §102(e) as being disclosed by Kuo et al. These claims are related to the sequential packing feature of the present invention as summarized in the specification at page 3, lines 13-30. The Office

Action cites no specific portion of Kuo et al. but indicates that these claims are inherently disclosed in Kuo et al. "because Kuo's system has to update any user access to the system." Applicants respectfully disagree because the mere updating of user access to the system does not inherently disclose all the steps of the claims at issue. If the Examiner persists in the rejection of the dependent claims, Applicants respectfully request a more detailed explanation (including more specific citations) as to how Kuo et al. discloses all claim limitations.

II. REJECTION UNDER 35 U.S.C. §103

The Office Action rejected claims 3-8, 12-17, 20-25, 30-35 and 40-45 under 35 U.S.C. §103(a) as being unpatentable over Kuo et al. in view of Easton. In view of the claim amendments and the argument set forth above, the combination of Easton with Kuo et al. cannot render the claims obvious.

Addressing the Office Action's particular arguments, Easton does not disclose the subject matter of claims 3-5, 12-14, 20-22, 30-32 and 40-42. Those claims are generally directed to methods and apparatus for performing a random code search in order to obtain an improved code. However, Easton is directed to a circuit for demodulating signals in a spread spectrum system employing a pilot signal on the forward link. Easton et al. briefly discusses spreading codes (Walsh function) in col. 4, but there is no discussion in Easton et al. regarding performing random code searches in order to improve these spreading codes. The cited section of Easton is directed to a sorting function, but is unrelated to searching for improved signature codes, whether randomly or otherwise.

Further, claims 7, 16, 24, 34 and 44 are directed to methods and apparatus for performing gradient searches of transmission delays for improved codes. While the cited section of Easton discloses search windows and integration of a pilot signal, this is not the same as a gradient search of transmission delays in order to find an improved spreading code.

III. CONCLUSION

For the reasons discussed above all pending claims, as amended, are allowable over the cited art. The claims are neither anticipated nor obvious in view of the cited art. Reconsideration and allowance of all claims is requested.

Respectfully submitted,

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